

---

# A New Species of *Tradescantia* (Commelinaceae) from Costa Rica

Robert B. Faden

Department of Botany, National Museum of Natural History, Smithsonian Institution,  
Washington, D.C. 20560-0166, U.S.A.

---

**ABSTRACT.** A new species of *Tradescantia* (sect. *Cymbispatha*), *T. grantii* Faden, is described from Costa Rica. Based on its morphology and karyotype the new species is most closely related to *T. plusiantha* from Mexico and probably *T. deficiens* from Mexico and Guatemala.

**Key words:** Commelinaceae, Costa Rica, *Tradescantia*.

While preparing a treatment of the Commelinaceae (Grant, Faden & Hammel, submitted to the editors) for the *Manual de las Plantas de Costa Rica* (Hammel et al., in prep.), it became necessary to deal with some specimens of an unnamed, white-flowered *Tradescantia* from Costa Rica that I had known for many years. A new collection of the plant by Jason Grant, including living plants, enabled me to confirm that it was a new species, which is described below as *Tradescantia grantii* Faden.

## SECTION CYMBISPATHA

***Tradescantia grantii*** Faden, sp. nov. TYPE: Costa Rica. Puntarenas: Jardín Botánico R. & C. Wilson, Coto Brus, San Vito, Las Cruces, 8°47'20"N, 82°58'30"W, 1200 m, small valley along the Río Jaba in virgin swatch of forest adjacent to the grounds of the gardens, 9 Jan. 1992, J. R. Grant & J. R. Rundell 92-01801 (holotype, US; isotypes, CR, F, K, MEX, MO, U). Figure 1.

Herbae perennes decumbentes; folia spiraliter disposita, pagina adaxiali glabra, pagina abaxiali in nervis pubescenti; paria cymarum (2)3 ad 15 per surculum, distaliter portata, bractea tertia plerumque nulla; spathae basibus cuneatis, pubescentibus, in marginibus ciliolatis; flores albi, stamina filis glabris, connectivis V-formibus.

Decumbent perennial, roots thin, fibrous; lateral shoots perforating the sheaths; lower internodes 5–8 cm, sparsely pilose to glabrescent; leaves spirally arranged, sheaths ca. 0.5 cm, tawny hirsute, especially along the fused edge, densely ciliate at the apex, with similar hairs, lamina petiolate, elliptic to lanceolate-elliptic or ovate, 5–12 × (1.5–)2–3.5 cm, petiole to 1 cm, puberulous on the midrib below, apex acute to acuminate, base symmetric, cu-

neate, adaxial surface glabrous, abaxial sparsely pubescent along the midrib and veins, margins sparsely to densely appressed ciliate. Flowering shoots ascending, 10–30 cm tall, with internodes decreasing distally and leaves clustered toward the end of the shoot. Inflorescences cyme-pairs, (2)3 to 15 per flowering shoot, borne terminally and from the axils of the upper leaves; peduncles erect to somewhat spreading, 1–4.5 cm, uniformly puberulous with tawny, uniseriate hairs, or the hairs present only in a broad vertical band; supernumerary bracts usually lacking; spathes spreading to ascending, 1.2–2.3 × 0.4–0.65 cm, folded, elliptic to ovate, apex acute to obtuse, sometimes mucronulate, base cuneate (usually narrowly, rarely broadly), usually densely puberulous basally, sparsely puberulous along the folded edge (midrib) above the base, margins ciliolate. Bracteoles easily visible between the spathes, 1–2 mm long, glabrous or sparsely pubescent. Flowers bisexual, ca. 5 mm wide; pedicels 2–4 mm long, glabrous or with a vertical line of sparse hairs; sepals unequal, green, outer sepal lanceolate-ovate, strongly keeled, hooded at apex, longer than the inner sepals, 2.5–3.5 × 1 mm, puberulous along the keel, inner sepals ovate to ovate-elliptic or lanceolate-elliptic, not keeled, 2–3 × 1–1.2 mm, glabrous; petals subequal, not clawed, obovate-elliptic to obovate or ovate-trullate, 2–2.8 × 1.2–2 mm, white; stamens 6, subequal or irregularly variable in length, filaments 1.9–2.8 mm long, glabrous, anthers basifixated, 0.35–0.7 × 0.55–1 mm, connective broad, in the form of an upside-down “V,” white, pollen sacs distal, ca. 0.2–0.25 × 0.25–0.3 mm, dehiscence latrorse, pollen white; ovary ovoid-globose, trigonous, 0.9–1.2 × 0.75–0.9 mm, glabrous, white or faintly tinged with purple, locules 3, equal, 2-ovulate, style subterminal, i.e., slightly sunken into ovary apex, straight, 0.6–1 mm long, stigma enlarged to distinctly deltate. Capsules broadly ellipsoid, ca. 2–2.5 × 1.5 mm, dark brown, cells of the wall transversely elongate; seeds uniseriate, 2 per locule (sometimes 1 by abortion), ovoid to ellipsoid, 1.1–1.3(–1.6 in a 1-seeded locule) × 1–1.1 mm, testa pale brown, rugose, the bumps arranged main-

ly in transverse ridges, hilum linear, a little shorter than the seed, embryotega  $\pm$  lateral, similarly colored to the testa.

*Habitat.* Wet forest, stream sides, and forest edge; (90–)200–1200 m.

*Distribution.* *Tradescantia grantii* is known only from Costa Rica on both the Atlantic and Pacific slopes. It likely occurs in Panama because the type locality, the Wilson Botanical Garden, is on the Costa Rica–Panama border.

*Chromosome number:*  $2n = 12$ .

#### DISCUSSION

Plants at the type locality (from label data) were found alongside the path that descends from the cultivated grounds of the Wilson Botanical Garden into the small forested valley of the Rio Jaba. Other plants were found in small clumps in shady, undisturbed undergrowth near the stream.

Some morphological variation was noted in the field and in cultivation. The leaves are very dark green and lustrous on both surfaces, but occasionally they may be purple beneath. The spathes are usually green, but they may be streaked with purple, at least in cultivation. In the field the foliage and spathes are commonly damaged by insects. The roots appear not to penetrate the soil very deeply, but to cling to the surface as the plants trail in their native habitats. The flowers are relatively inconspicuous because of their small size and sparse numbers. They set fruit in the greenhouse in the absence of pollinators, so they are presumed to be self-compatible. Open flowers were observed in the field between 10:30 A.M. and 1:00 P.M. In the greenhouse they open about 11:30 A.M. (in October).

Spathe- or leaf-like bracts sometimes immediately subtend one or both of the spathes of the cyme-pair in some species of *Tradescantia* sect. *Cymbispatha*, e.g., *T. gracillima* Standley and *T. cymbispatha* C. B. Clarke. A single such supernumerary bract has been observed in *T. grantii* in the collection *Kennedy 1384*. Otherwise they are lacking in this species.

A somatic number of  $2n = 12$  was obtained for *T. grantii* by the Royal Botanic Gardens, Kew, in 1992, from cultivated material of *Grant & Rundell 92-01801* (Fig. 2). As is typical for species of *Tradescantia* sect. *Cymbispatha*, the karyotype is composed of acrocentric (10) and metacentric (2) chromosomes, the latter approximately twice the length of the former (Jones et al., 1981). The number of major chromosome arms, with an acrocentric chromosome counting as one and a metacentric as two,

is 14, displaying a *nombre fundamental* of seven that is also characteristic of section *Cymbispatha* (Jones et al., 1981).

*Tradescantia grantii* has been known to me for many years as a probable undescribed species. Hunt (1994) treated these white-flowered Costa Rican plants as possibly belonging to *T. deficiens* Brandegee, a rare plant. I could not adequately describe or differentiate the Costa Rican plant until I obtained living material of it and was able to examine the type of *T. deficiens* (*Purpus 7172*, UC). The most distinctive features of *T. grantii* are the spirally arranged leaves that are pubescent on the veins beneath, the numerous cyme-pairs, the absence of supernumerary bracts, the cuneate-based spathes that are basally pubescent, and the very small white flowers, with glabrous stamen filaments and V-shaped anthers.

*Tradescantia grantii* appears to be most closely related to *T. plusiantha* Standley, an apparently uncommon species from the states of Chiapas and Oaxaca, Mexico (seven collections seen). This was first suggested by David Hunt (pers. comm.), even before we had living material of the new species. Both species have spirally arranged leaves with symmetric bases, and numerous cyme-pairs. Even more significantly, the karyotype reported here is identical to that of *T. plusiantha* (Jones et al., 1981). *Tradescantia grantii* differs from *T. plusiantha* (Table 1) by the former's perennial habit, the lamina glabrous above and pubescent along the veins beneath (vs. sparsely pilose above and glabrous beneath), the usual absence of supernumerary bracts, the spathes with  $\pm$  cuneate (vs.  $\pm$  rounded) bases, the folded edge of the spathe (midrib) puberulous, especially basally (vs. glabrous or with a few distal hairs), the outer sepal with a line of hairs (vs. glabrous or with a few minute apical hairs), the petals smaller and white (vs. usually pink), the filaments glabrous (vs. bearded in the middle or glabrous), and the anther connective a narrow "V" (vs. transversely oblong to deltate).

*Tradescantia grantii* also shows similarities to *T. deficiens* (Table 1), a species known only from the type locality (Chiapas, Mexico) and a single collection from Guatemala (*Breedlove 11615*, US), in its spirally arranged leaves with symmetric leaf bases and perennial habit (probably perennial in *T. deficiens*). It differs from *T. deficiens* by the lamina glabrous above and pubescent along the veins beneath (vs. glabrous on both surfaces), the spathes clustered (vs. solitary), the base of the spathe  $\pm$  cuneate (vs.  $\pm$  truncate), the spathe margins ciliolate (vs. glabrous), the folded edge of the spathe (midrib) puberulous, especially basally (vs. glabrous or



Figure 1. *Tradescantia grantii* Faden. —A. Habit. —B. Flower. —C. Immature fruit. —D. Seed. All from living material of Grant & Rundell 92-01801. Illustration by Dolly Baker.

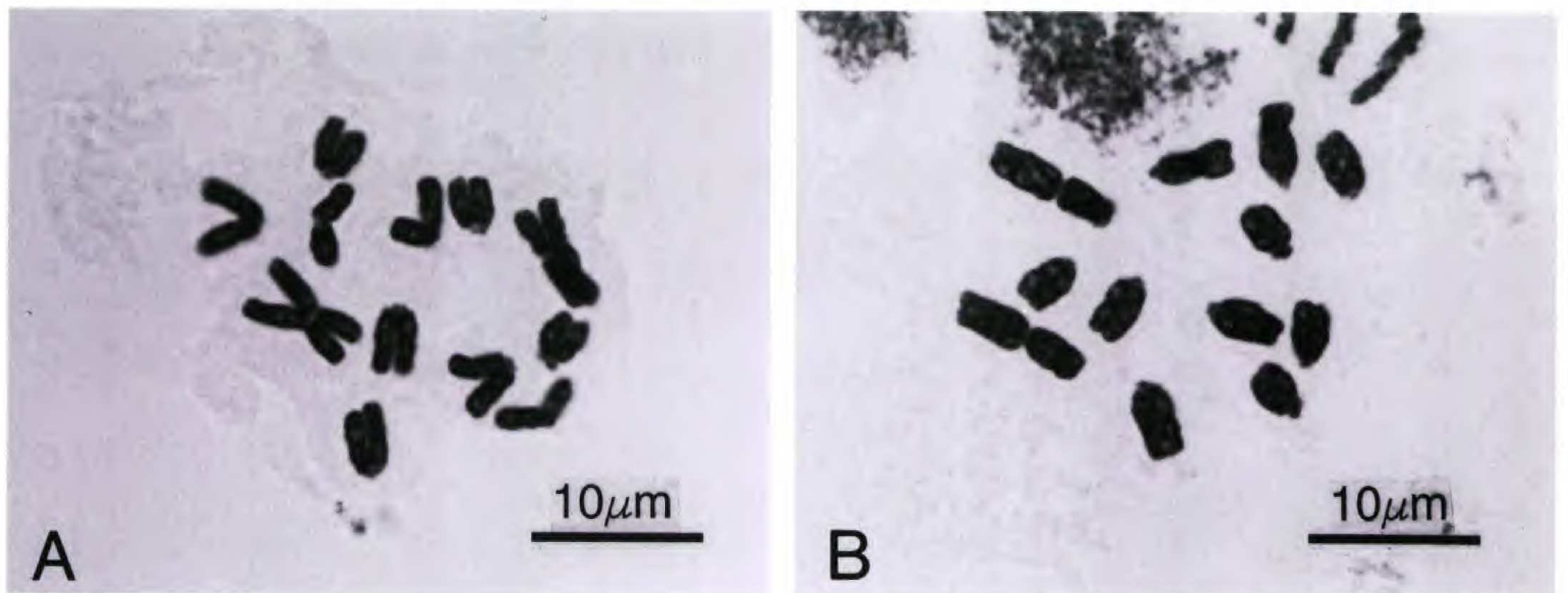


Figure 2. —A, B. Mitotic chromosomes of *Tradescantia grantii* from root tips ( $2n = 12$ ). From living material of Grant & Rundell 92-01801 (Royal Botanic Gardens, Kew, cytology number 95-332). Root-tip squashes and photomicrographs by Adele Reynolds.

with a few distal hairs), the petals smaller and white (vs. pink), the filaments glabrous (vs. bearded toward the apex), and the anther connective a narrow “V” with distal pollen sacs (vs. circular to deltate with basal pollen sacs).

Some variation has been reported in the floral morphology of *Tradescantia plusiantha*. Hunt (1994) recorded the petals as usually pink. Sometimes they are white, according to label data (Matuda 4117, GH). Hunt (1994) described the filaments of this species as glabrous, but in all three collections that I have examined (Maya 464 & 519, Nelson 2825, all US) they are bearded. When de-

terminable, the hairs were in the middle of the filament. The type description and accompanying illustration of *Tradescantia tonalamonticola* Matuda (Matuda, 1955), a synonym of *T. plusiantha* (Hunt, 1994), record the filaments as bearded in the middle.

*Tradescantia grantii* is named after Jason Randall Grant (1969–), whose collection and extensive field notes have enabled me to characterize and describe this as a new species.

*Paratypes.* COSTA RICA. **Alajuela:** tall wet forest E of the Río San Rafael and S of the hot springs, W of La Marina, 10°23'N, 84°23'W, 500 m, 19 May 1968, Burger

Table 1. Comparison of *Tradescantia plusiantha*, *T. grantii*, and *T. deficiens*.

	<i>T. plusiantha</i>	<i>T. grantii</i>	<i>T. deficiens</i>
Petal color	Pink (or white)	White	Pink
Petal length	ca. 4 mm	2–2.8 mm	ca. 4.5–6 mm
Filament bearding	Bearded (or glabrous)	Glabrous	Bearded
Lamina pubescence	Adaxial surface sparsely pilose; abaxial glabrous	Adaxial surface glabrous; abaxial pubescent on midrib & veins	Both surfaces glabrous
Cyme-pairs	Clustered	Clustered	Solitary
Supernumerary bracts	Present	Absent (rarely present)	Absent
Peduncle pubescence	Line of hairs	Usually uniformly puberulous (sometimes a line of hairs)	Line of hairs
Spathe base	± rounded	± cuneate	± truncate
Spathe attitude	Spreading to reflexed	Spreading to ascending	Spreading to ascending
Spathe margins	Ciliolate to ciliate	Ciliolate	Glabrous
Spathe folded edge (midrib)	Glabrous or with a few distal hairs	Puberulous especially basally	Glabrous or with a few distal hairs
Capsule locules	2-seeded	2-seeded	1-seeded(?)
Habit	Annual	Perennial	Perennial
Compatibility	Self-incompatible	Self-compatible	?
Distribution	Mexico	Costa Rica	Mexico, Guatemala

& Stolze 5015 (F); between Cerro Chato and Cerro de los Perditos, Volcán Arenal, 17 Feb. 1989, *Russell & Earth-watch volunteers 751* (US); Canton de San Ramón, Reserva Biológica Monteverde, Río Peñas Blancas Valley, area near Refugio Alemán, 10°18'N, 84°45'W, 900–1100 m, 28 Feb. 1992, *Haber, Bello & Grayum 11291* (US). **Li-món:** trail to Río Madre de Dios from La Lola, 27 Feb. 1972, *Kennedy 1384* (CR); Parque Nacional Braulio Carrillo, Sendero Botarama, a la par del Río Sucio, 10°09'00"N, 83°56'5"W, 350 m, 31 Jan. 1991, *Hammel, Maas & Maas 18035* (US). **Puntarenas:** Jardín Bot. R. & S. Wilson, Coto Brus, San Vito, Las Cruces, sendero al río, bosque aledaño al Río Jaba, 8°47'20"N, 82°58'30"W, 1200 m, 7 Feb. 1990, *Gomez-Laurito et al. 11878* (CR).

*Acknowledgments.* I thank Dolly Baker for the illustration; Jason Grant for collecting the living and herbarium material that yielded the bulk of the information about this species; Adele Reynolds, a former sandwich student—students who “sandwich” a year of work at such places as the Royal

Botanic Gardens, Kew, into their university studies—at the Jodrell Laboratory, Royal Botanic Gardens, Kew, for the root-tip squashes and chromosome photomicrographs; and Peter Brandham, Jodrell Laboratory, Royal Botanic Gardens, Kew, for permission to reproduce the chromosome photomicrographs.

#### Literature Cited

- Hunt, D. R. 1994. Commelinaceae. Pp. 157–173 in G. Davidse, M. Sousa S. & A. O. Chater (editors), *Flora Mesoamericana*, Vol. 6. Universidad Nacional Autónoma de México, México D.F.; Missouri Botanical Garden, St. Louis; The Natural History Museum, London.
- Jones, K., A. Kenton & D. R. Hunt. 1981. Contributions to the cytotaxonomy of the Commelinaceae. Chromosome evolution in *Tradescantia* section *Cymbispatha*. *Bot. J. Linn. Soc.* 83: 157–188.
- Matuda, E. 1955. Nuevas Commelinaceae de México y Guatemala. *Anales Inst. Biol. Univ. Nac. México* 26: 59–77.